

41. "new" A method for producing a plant comprising transforming a plant cell with the polynucleotide of Claim 35 and regenerating a plant from the transformed plant cell.

42. "new" A plant comprising the chimeric gene of Claim 35.

43. "new" A seed comprising the chimeric gene of Claim 35.

44. "new" A method for isolating a polypeptide encoded by the polynucleotide of Claim 35 comprising isolating the polypeptide from a cell containing a chimeric gene comprising the polynucleotide operably linked to a regulatory sequence.

45. "new" The isolated polynucleotide of Claim 35 wherein the nucleotide sequence comprises SEQ ID NO:1.

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46. "new" A chimeric gene comprising the nucleic acid fragment of Claim 35 operably linked to a regulatory sequence.

47. "new" A transformed host cell comprising the chimeric gene of Claim 46.

48. "new" A method of altering the level of expression of a delta-5 acyl-CoA desaturase in a host cell comprising:

- (a) transforming a host cell with the chimeric gene of Claim 46; and
- (b) growing the transformed host cell produced in step (a) under conditions that are suitable for expression of the chimeric gene

wherein expression of the chimeric gene results in production of altered levels of a delta-5 acyl-CoA desaturase in the transformed host cell.

49. "new" A method of producing a desaturated fatty acid comprising a double bond in the delta-5 position in a host cell, the method comprising:

- (a) transforming a host cell with the chimeric gene of Claim 46; and
- (b) growing the transformed host cell produced in step (a) under conditions that are suitable for expression of the chimeric gene

wherein expression of the chimeric gene results in production of a desaturated fatty acid comprising a double bond in the delta-5 position.

50. "new" A method of producing seed oil comprising a desaturated fatty acid wherein the fatty acid comprises a double bond in the delta-5 position, the method comprising:

- (a) transforming a plant cell with the chimeric gene of Claim 46;
- (b) growing a fertile plant from the transformed plant cell of step (a);
- (c) obtaining a seed from the plant of step (b); and
- (d) processing the seed of step (c) to obtain oil

wherein the oil comprises a desaturated fatty acid wherein the fatty acid comprises a double bond in the delta-5 position.

51. "new" The method of Claim 50 wherein the plant cell is derived from an oilseed crop.

52. "new" The method of Claim 51 wherein the oilseed crop is soybean.